



3933 US ROUTE 11, CORTLAND, NEW YORK 13045, U.S.A.  
Phone Number: 1-800-345-3851 Fax Number: 607-758-3648

PROJECT NO.: 3145779-311

DATE: March 3, 2008

TEST REPORT NO.: 3145779CRT-001b

RENDERED TO:

**HellermannTyton**

HellermannTyton Corporate  
7930 North Faulkner Road  
Milwaukee, WI 53224  
USA

**HCM**  
Hitachi Cable Manchester

Hitachi Cable Manchester  
900 Holt Avenue  
Manchester, NH 03109  
USA

**TEST:**

Performance testing of the cabling configurations as defined in, and to the requirements of, ANSI/TIA/EIA-568-B.1 for Category 5e Cabling Systems.

**STATEMENT OF LIMITATIONS:**

At the client's request, the purpose of this report is to provide electrical performance data on the test sample. It is not valid to use this report for any other purpose.

**STANDARDS USED:**

ASTM D4566-98, Standard Test Methods for Electrical Performance Properties of Insulations and Jackets for Telecommunications Wire and Cable, dated December 10, 1998.

ANSI/TIA/EIA-568-B.1, Commercial Building Telecommunications Cabling Standard; Part 1: General Requirements, dated April 12, 2001.

ANSI/TIA/EIA-568-B.2, Commercial Building Telecommunications Cabling Standard; Part 2: Balanced Twisted Pair Cabling Components, dated April 23, 2001.

**AUTHORIZATION:**

The project was authorized by, HellermannTyton Corporation & Hitachi Cable Manchester, Inc. with Purchase Order No. 24775.

**DATE OF TEST:**

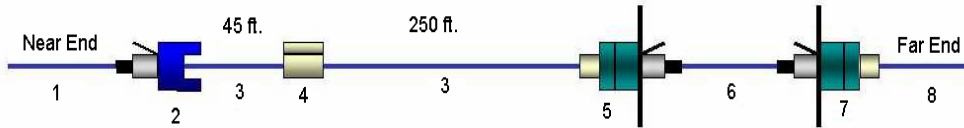
March 3, 2008

**TEST REPORT REVISION HISTORY:**

First Issue: March 3, 2008 Original Document

**SAMPLE DESCRIPTION:**

Channel (4 Connector)



<u>Component ID</u>	<u>Manufacturer</u>	<u>Part Number</u>	<u>Description</u>
1,8	Hellermann Tyton	PCGRY10	Equipment Cord 10 ft.
2	Hellermann Tyton	RJ45FC5E-RED	Wall Outlet
3	Hitachi	39419-8	Horizontal Cable
4	Hellermann Tyton	T110KIT1004	110 Block
5,7	Hellermann Tyton	PP110C5E24	Patch Panel
6	Hellermann Tyton	PCGRY10	Cross Connect 10 ft.

The samples were received on February 19, 2008 and were in good condition. All samples were supplied by the client.

**EQUIPMENT LIST:**

The following equipment was employed in conducting the tests.

<u>Equipment Used</u>	<u>Model Number</u>	<u>Serial Number</u>	<u>Control Number</u>	<u>Calibration Date</u>
Hewlett Packard Automatic Cable Test System	HP46152A	3903U01003	E356	03/07/07

**PROCEDURE:** The testing was measured in accordance with the measurements and calculations list below:

**Measurements**

- Insertion Loss: ASTM D4566-98 Paragraph 26
- Near-End Crosstalk (NEXT): ASTM D4566-98 Paragraph 24
- Far End Crosstalk (FEXT): ASTM D4566-98 Paragraph 25
- Return Loss: ASTM D4566-98 Paragraph 45.3
- Propagation Delay: ASTM D4566-98 Paragraph 40

**Calculations**

- NEXT Power Sum: ASTM D4566-98 Paragraph 24
- Attenuation to Cross Talk Ratio: ACR was calculated by subtracting Attenuation from (NEXT)
- ACR Power Sum: PS ACR was determined using the same procedure as ACR except that the Power Sum NEXT was used in the computation in lieu of the Worse Case NEXT
- Equal Level FEXT: ANSI/TIA/EIA-568-B.1 Paragraph 11.2.4.7
- ELFEXT Power Sum: ASTM D4566-98 Paragraph 25 and ANSI/TIA/EIA-568-B.1 Paragraph 11.2.4.8
- Delay Skew: ASTM D4566-98 Paragraph 40 and ANSI/TIA/EIA 568-B.1 Paragraph 11.2.4.11

**REQUIREMENTS:** The testing was computed with the measurements and calculations list below:

**Measurements**

- Attenuation: ANSI/TIA/EIA 568-B.1 Paragraph 11.2.4.4 and ANSI/TIA/EIA-568-B.2 Paragraph 4.3.4.7
- Near-End Crosstalk (NEXT): ANSI/TIA/EIA-568-B.1 Paragraph 11.2.4.5
- Return Loss: ANSI/TIA/EIA-568-B.1 Paragraph 11.2.4.9

**Calculations**

- ACR: ANSI/TIA/EIA-568-B.1 Paragraph 11.2.4.4 and 11.2.4.9
- NEXT Power Sum: ANSI/TIA/EIA-568-B.1 Paragraph 11.2.4.6
- PS ACR: ANSI/TIA/EIA-568-B.1 Paragraph 11.2.4.4 and 11.2.4.6
- ELFEXT: ANSI/TIA/EIA-568-B.1 Paragraph 11.2.4.7
- ELFEXT Power Sum: ANSI/TIA/EIA-568-B.1 Paragraph 11.2.4.8
- Propagation Delay: ANSI/TIA/EIA-568-B.1 Paragraph 11.2.4.10
- Delay Skew: ANSI/TIA/EIA-568-B.1 Paragraph 11.2.4.11

**RESULTS:**

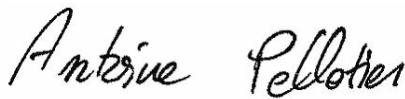
See Appendix A for test results.

**CONCLUSION:**

The cabling configuration, as previously described and supplied by the client, was tested in accordance with the procedures contained herein, and did comply with the indicated applicable requirements. The testing was performed at Intertek located in Cortland, New York.

These procedures and requirements were taken from the standards referred to on page 1.

Reviewed and Approved By:



Antoine Pelletier  
Engineer  
Global Cabling Products Testing



John Cash  
Technician  
Global Cabling Products Testing

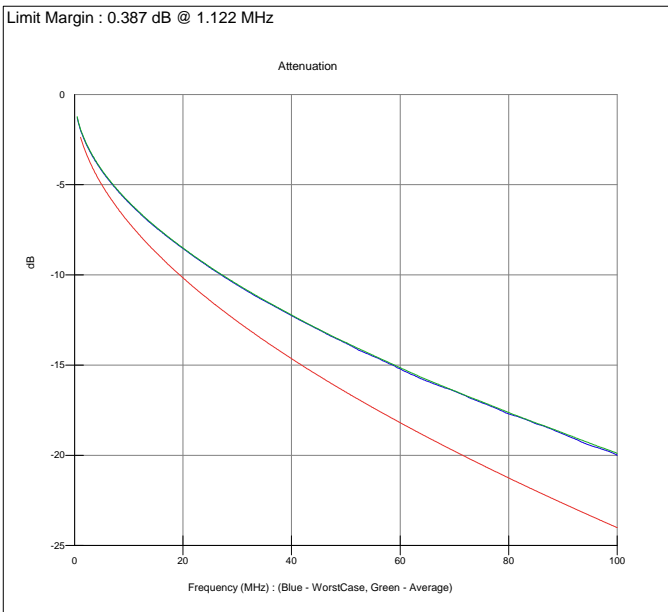


Kathy Heath  
Project Coordinator  
Global Cabling Products Testing

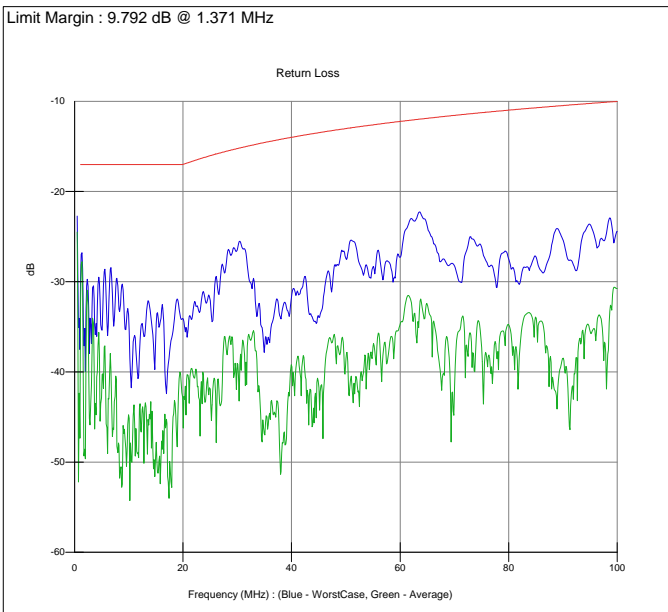


## Summary

<b>Client</b>	Hellermann	<b>Report No</b>	3145779CRT-001b
<b>Specification</b>	TIA 568B1 - Cat 5e Channel 100L 150S MHz	<b>Length</b>	100
<b>Part No</b>	Cat 5e Plenum	<b>Temperature</b>	20 °C
<b>Test Started</b>	3/3/2008 11:51:17 AM	<b>Test Status</b>	Complies
<b>Description</b>	4x24 UTP-CMP-Solid		A
<b>Technician</b>	John Cash		



Attenuation			
Freq	Worst Case	Average	Spec
1.	1.9	1.8	2.2
4.	3.8	3.7	4.5
8.	5.3	5.3	6.3
10.	6.0	5.9	7.1
16.	7.6	7.6	9.1
20.	8.5	8.5	10.2
25.	9.6	9.6	11.4
31.25	10.8	10.8	12.9
62.5	15.6	15.5	18.6
100.	20.0	19.9	24.0

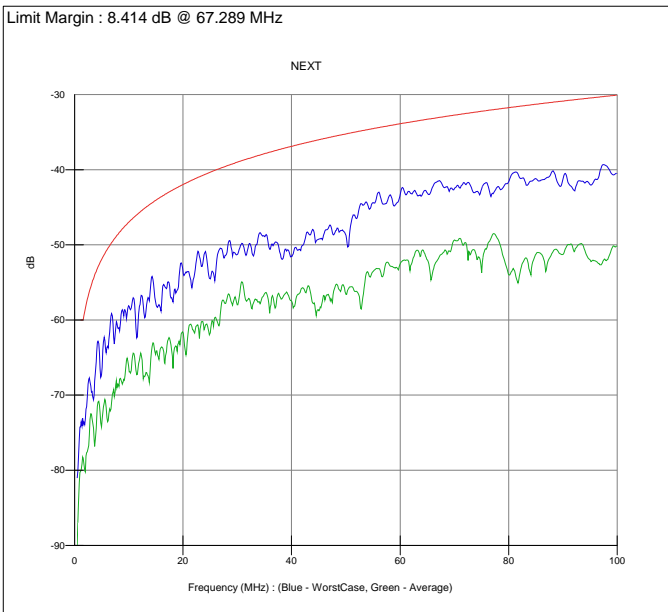


Return Loss			
Freq	Worst Case	Average	Spec
1.	37.4	47.0	17.0
4.	35.0	44.2	17.0
8.	30.9	48.6	17.0
10.	34.4	44.9	17.0
16.	33.4	48.3	17.0
20.	34.1	45.5	17.0
25.	32.1	41.9	16.0
31.25	26.3	37.5	15.1
62.5	23.2	34.0	12.1
100.	24.4	30.7	10.0

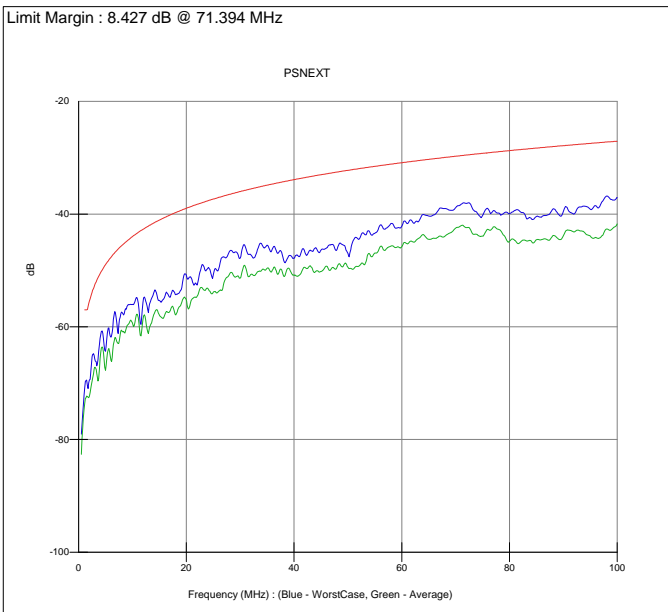


## Summary

<b>Client</b>	Hellermann	<b>Report No</b>	3145779CRT-001b
<b>Specification</b>	TIA 568B1 - Cat 5e Channel 100L 150S MHz	<b>Length</b>	100
<b>Part No</b>	Cat 5e Plenum	<b>Temperature</b>	20 °C
<b>Test Started</b>	3/3/2008 11:51:17 AM	<b>Test Status</b>	Complies
<b>Description</b>	4x24 UTP-CMP-Solid		A
<b>Technician</b>	John Cash		



NEXT			
Freq	Worst Case	Average	Spec
1.	74.3	80.3	60.0
4.	65.4	74.2	53.5
8.	61.4	68.5	48.6
10.	58.2	66.4	47.0
16.	58.4	63.6	43.6
20.	53.7	61.7	42.0
25.	54.5	61.7	40.3
31.25	50.4	56.2	38.7
62.5	42.9	51.6	33.6
100.	40.5	50.1	30.1

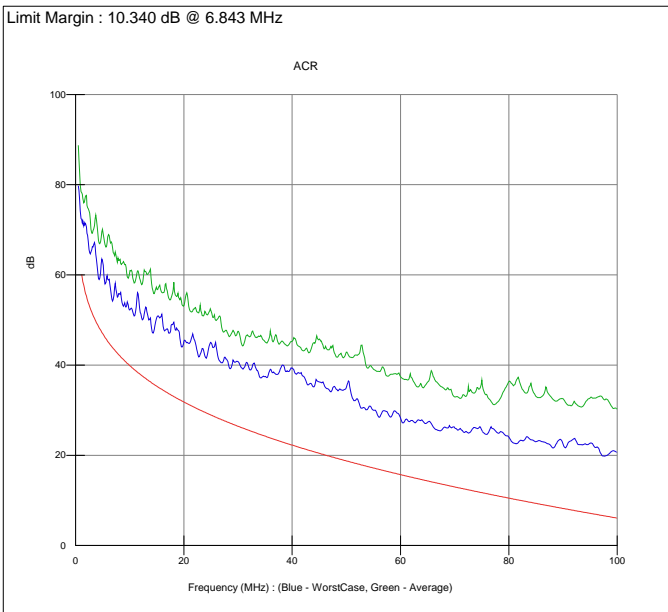


PSNEXT			
Freq	Worst Case	Average	Spec
1.	72.1	74.6	57.0
4.	62.0	65.5	50.5
8.	57.4	60.7	45.6
10.	56.0	59.4	44.0
16.	54.6	57.8	40.6
20.	51.0	55.4	39.0
25.	50.7	53.9	37.3
31.25	46.7	50.3	35.7
62.5	41.4	44.8	30.6
100.	37.0	41.8	27.1

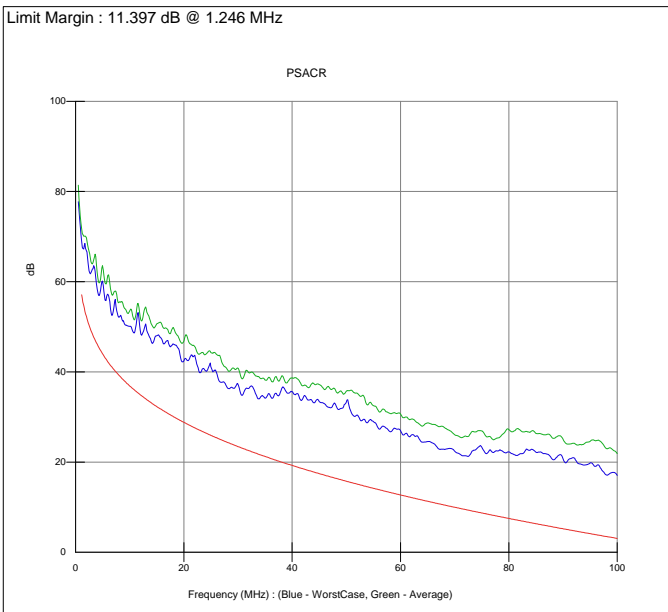


## Summary

<b>Client</b>	Hellermann	<b>Report No</b>	3145779CRT-001b
<b>Specification</b>	TIA 568B1 - Cat 5e Channel 100L 150S MHz	<b>Length</b>	100
<b>Part No</b>	Cat 5e Plenum	<b>Temperature</b>	20 °C
<b>Test Started</b>	3/3/2008 11:51:17 AM	<b>Test Status</b>	Complies
<b>Description</b>	4x24 UTP-CMP-Solid		A
<b>Technician</b>	John Cash		



ACR			
Freq	Worst Case	Average	Spec
1.	72.5	78.5	61.0
4.	61.7	70.5	49.1
8.	56.1	63.2	42.3
10.	52.2	60.4	39.9
16.	50.8	56.0	34.5
20.	45.2	53.2	31.8
25.	45.0	52.2	28.9
31.25	39.7	45.4	25.9
62.5	27.3	36.2	15.0
100.	20.7	30.3	6.1

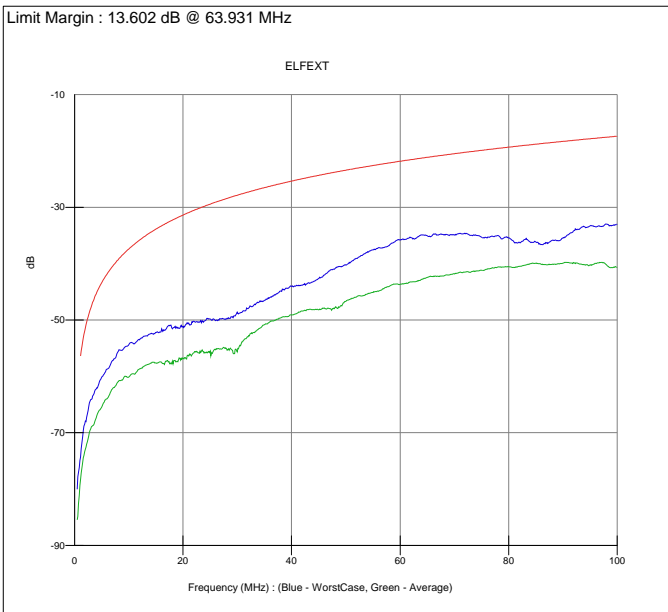


PSACR			
Freq	Worst Case	Average	Spec
1.	70.3	72.8	58.0
4.	58.3	61.8	46.1
8.	52.2	55.4	39.3
10.	50.1	53.5	36.9
16.	47.0	50.3	31.5
20.	42.5	46.9	28.8
25.	41.2	44.3	25.9
31.25	36.0	39.6	22.9
62.5	25.9	29.4	12.0
100.	17.0	21.9	3.1

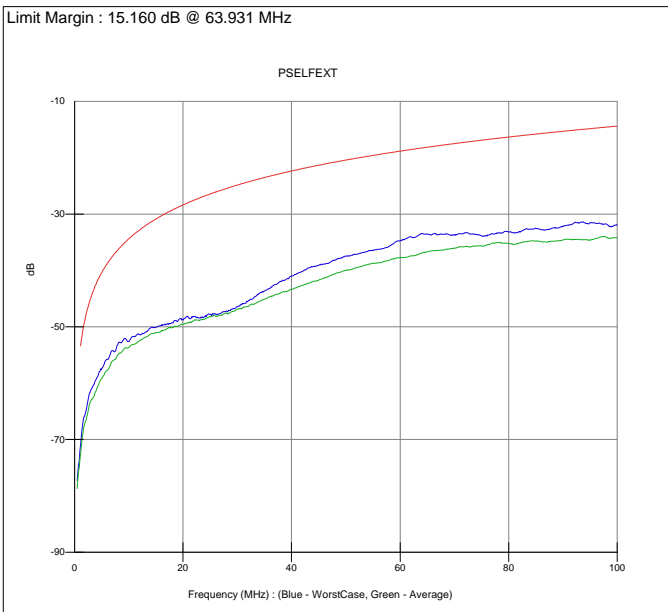


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<b>Specification</b>	TIA 568B1 - Cat 5e Channel 100L 150S MHz	<b>Length</b>	100
<b>Part No</b>	Cat 5e Plenum	<b>Temperature</b>	20 °C
<b>Test Started</b>	3/3/2008 11:51:17 AM	<b>Test Status</b>	Complies
<b>Description</b>	4x24 UTP-CMP-Solid		
<b>Technician</b>	John Cash		



ELFEXT			
Freq	Worst Case	Average	Spec
1.	74.9	79.3	57.3
4.	62.2	67.3	45.4
8.	55.6	61.0	39.3
10.	54.4	60.1	37.4
16.	51.8	57.5	33.3
20.	51.3	56.8	31.4
25.	49.9	55.5	29.4
31.25	48.4	53.5	27.5
62.5	35.6	43.2	21.5
100.	33.0	40.6	17.4



PSELFEXT			
Freq	Worst Case	Average	Spec
1.	71.9	73.6	54.3
4.	59.3	61.3	42.4
8.	53.0	55.0	36.3
10.	52.6	53.7	34.4
16.	49.7	50.7	30.3
20.	48.8	49.5	28.4
25.	47.8	48.2	26.4
31.25	45.9	46.5	24.5
62.5	34.2	37.4	18.5
100.	31.9	34.2	14.4